

# **DRAWER GUIDE RAIL ASSEMBLY WITH RELEASEABLY SECURED BUMPERS**

## **BACKGROUND OF THE INVENTION**

1. **Field of the Invention.** The present invention relates to a guide rail assembly for use with a drawer and, more particularly, to an assembly to guide the movement of the drawer into and out of an article of furniture that includes the use of releaseably secured bumpers for controlling and partially absorbing the impact of the drawer opening and closing.

2. **Description of the Prior Art.** Slidable drawer opening and closing devices are well known and conventionally utilize supporting and slidably connected guide rails and rail engaging slides to support the drawer within its frame and allow for openable and closeable movement therein. These devices are usually made of hard materials such as plastic which can cause excessive noise when the drawer is closed. Some devices have been developed to at least partially suppress such noise. Flexible buffers and yieldable stops are sometimes implemented in slide assemblies to soften the impact of the drawer closing. Sometimes shock absorbers are used to deal with the drawer closing noise. Even with such improvements, closure noise usually is directly related to the force used in the closing exercise and can still frequently occur unless the individual involved is very sensitive to the need to carefully and slowly close the drawer and avoid the noise.

Thus it is apparent that more controlled and effective drawer closure noise management is very desirable, and it is to that end that the present invention is directed.

### SUMMARY AND OBJECTIVES OF THE INVENTION

The present invention includes a guide rail assembly for use with a drawer to guide the movement of the drawer into and out of an article of furniture. The assembly is made up of a supporting rail mounted to a supporting surface such as a furniture side wall, a pull-out rail attached to the drawer and at least one carriage positioned between the supporting rail and the pull-out rail. The supporting rail and the pull-out rail have at least one stop for limiting movement of the pull-out rail and carriage with respect to the supporting rail. The at least one carriage is provided with one or more flexible bumpers to absorb the impact of drawer opening and closing and control the noise associated with that activity. The bumpers are removable and can be changed in size or capacity to adjust to changes in drawer or drawer content weight.

From the foregoing summary, it can be seen that a primary objective of the present invention is to provide a rail guide assembly that has all of the advantages of prior art devices and none of the disadvantages.

Another primary objective of the present invention is to provide a guide rail assembly that suppresses noise when the drawer on which it is mounted is opened or closed.

Yet another objective of the present invention is to provide a rail guide assembly having interchangeable bumpers to reduce noise associated with drawer opening and closure.

Thus there has been outlined the more important features of the invention in order that the detailed description that follows may be better understood and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto. In that respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its arrangement of the components set forth in the following description and illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways.

It is also to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting in any respect. Those skilled in the art will appreciate that the concept upon which this disclosure is based may readily be utilized as a basis for designing other structures, methods and systems for carrying out the several purposes of this development. It is important that the claims be regarded as including such equivalent methods and products resulting therefrom that do not depart from the spirit and scope of the present invention. The application is neither intended to define the invention, which is measured by its claims, nor to limit its scope in any way.

Thus, the objects of the invention set forth above, along with the various features of novelty which characterize the invention, are noted with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and the specific results obtained by its use, reference should be made to the following detailed specification taken in conjunction with the accompanying drawings wherein like characters of reference designate like parts throughout the several views.

The drawings are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification. They illustrate embodiments of the invention and, together with their description, serve to explain the principles of the invention.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a top perspective view of a fully opened drawer within a frame simulating an article of furniture incorporating the present invention;

Fig. 2 is a top perspective view of an intermediate rail in the drawer close position showing the location of two carriages embodying the present invention;

Fig. 3 is a top perspective view of the rail shown in Fig. 2 in the drawer open position showing the location of two carriages embodying the present invention ;

Fig. 4 is a top perspective view of a carriage embodying the present invention showing roller cages, rollers, one releaseably secured bumper in place and one removed;

Fig. 5 is a bottom perspective view of the carriage shown in Fig. 4;

Fig. 6 is a side elevational view of the carriage shown in Figs. 2 - 5;

Fig. 7 is an end elevational view of the carriage shown in Figs. 2 - 6 mounted on the intermediate rail with the bumper engaging a stop formed in the rail; and

Fig. 8 is an end elevational view of the rails and carriages of the guide rail assembly of the present invention.

#### DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

Referring now to the drawings and particularly to Fig 1, drawer 10 is positioned within a frame 12 in the open position, the frame simulating a cabinet or chest. A guide rail assembly shown generally as 14 includes a supporting rail 16 fastened to a side wall 22, a pull-out rail 18 fastened to the drawer 10, and an intermediate rail 20 positioned between supporting rail 16 and pull out rail 18. One or more carriages 34 are located between pull-out rail 18 and intermediate rail 20, and intermediate rail 20 has at least one stop 28 for limiting movement of pull-out rail 18 and carriage with respect to supporting rail 16.

The operating arrangement of the rails and carriages is shown in Fig. 8. Supporting rail 16 is attached to cabinet or frame wall 22, and pull-out rail 18 is secured to drawer side 43. Intermediate rail 20 is positioned between supporting rail 16 and pull-out rail 18. One or more carriages 34 are positioned between pull-out rail 18 and intermediate rail 20. One or more additional carriages 36 are

positioned between the upper horizontal edge of intermediate rail 20 and the lower horizontal end of supporting rail 18.

Pull-out rail 18 is secured to drawer 10. When drawer 10 is opened, pull-out rail 18 and intermediate rail 20 move outwardly with the drawer until intermediate rail 20 is about halfway extended outside the drawer front opening. Here intermediate rail 20 engages a stop, and pull-out rail 18 then continues outwardly alone until it reaches its outermost position. When drawer 10 is closed, pull-out rail 10 moves inwardly alone, then engages intermediate rail 20 and the two rails move on together until engaging supporting rail 16 to fully close drawer 10.

Fig. 2 shows the positioning of carriages 34 on intermediate rail 20 in the drawer close condition. When the drawer is opened, pull out rail 18 moves outside the drawer and carriages move to the positions on intermediate rail 20 shown in Fig. 3.

The details of the carriage 34 used in the present guide rail assembly are shown in Figs. 4 – 7. Carriage 34 is made up of three walls 44, 46, 48 that form a U-shaped member shown generally as 50. At least one of the walls have one or more roller cages formed therein. At least one of the walls 44, 46, 48 carry one or more releaseably secured resilient bumpers.

The preferred structure of carriage 34 is shown in Fig. 5 wherein each wall 44, 46, 48 has two roller cages 52 with each cage supporting one roller 54. The connecting wall 46 cooperatively receives bumpers 56, 58 in appropriately designed recesses 60, 62. One bumper 56 is positioned in recess 60 on one edge

64 of wall 46, and the other bumper 58 is positioned in recess 62 on the other edge 66 of wall 46.

A cross sectional view of carriage 34 mounted on intermediate rail 20 is shown in Fig. 7. Walls 44, 46, 48 wrap snugly around three sides of intermediate rail 20 so that the rail-engaging rollers roll smoothly on the three surfaces of rail 20 and provide even and unwavering drawer movement.

The present invention is usually applied to each side of a drawer so that two units like that described are required for each drawer. However, a single unit of the present invention may be adapted for use on a single drawer, the unit being positioned midway of the drawer front and adjacent the lower part of the frame or cabinet.

From the proceeding description, it can be seen that a guide rail assembly has been provided that will possess all the advantages of prior art devices and offer additional advantages not heretofore achievable. With respect to the foregoing invention, the optimum dimensional relationship to the parts of the invention including variations in size, materials, shape, form, function and manner of operation, use and assembly are deemed readily apparent to those skilled in the art, and all equivalent relationships illustrated in the drawings and described in the specification are intended to be encompassed herein.

The foregoing is considered as illustrative only of the principles of the invention. Numerous modifications and changes will readily occur to those skilled in the art, and it is not desired to limit the invention to the exact construction and operation shown and described. All suitable modifications and

equivalents that fall within the scope of the appended claims are deemed within the present inventive concept.

What is claimed is: